

ABSTRACT OF THE DISCLOSURE

A hydraulic machine includes a valve plate, with first and second fluid ports in a surface thereof. A cylinder barrel is rotatably coupled to the valve plate. A plurality of cylinders is formed in the cylinder barrel, such that, as the barrel rotates, each cylinder is coupled to the first and second fluid ports, sequentially. First and second pressure relief ports are formed in the surface of the valve plate between the first and second fluid ports at top- and bottom-dead-center, respectively. A cross-port bore is formed in the valve plate, placing the first and second pressure relief ports in fluid communication with each other. As each cylinder rotates to top-dead-center, an opposite cylinder rotates to bottom-dead-center. The respective cylinders are coupled to the first and second pressure relief ports, such that differential pressure in the cylinders is equalized.

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